

ANALYZING THE RELATIONSHIP BETWEEN BREASTFEEDING AND POSTPARTUM
DEPRESSION: AN INTEGRATIVE REVIEW

An Integrative Review

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Sarah K. Johnson

Liberty University

Lynchburg, VA

July 7, 2021

**ANALYZING THE RELATIONSHIP BETWEEN BREASTFEEDING AND
POSTPARTUM DEPRESSION: AN INTEGRATIVE REVIEW**

An Integrative Review

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Sarah K. Johnson

Liberty University

Lynchburg, VA

July 7, 2021

Integrative Review Chair Approval:

[Redacted Signature]

7/7/2021

[Redacted Signature]

Date

Abstract

Treating maternal mental health and identifying contributing factors are priorities in health care. Postpartum depression is a very prevalent and burdensome illness in the United States that negatively affects the health and well-being of postpartum mothers as well as their infants. While breastfeeding is known to be advantageous to both maternal and infant health, it may be implicated in the development of postpartum depression in some scenarios. The purpose of this integrative review is to examine the relationship between breastfeeding and postpartum depression to promote the best health outcomes for both the mother and the child with goals of determining whether rates of postpartum depression differ in relation to breastfeeding and uncovering strategies to decrease postpartum depression within the realm of breastfeeding. This integrative review found an inverse relationship between breastfeeding and postpartum depression exists: Breastfeeding may be protective against postpartum depression, but postpartum depression may encumber successful breastfeeding. The project leader performed a thematic data analysis of the literature and identified themes, then produced suggestions for practice to decrease the prevalence of postpartum depression within the realm of breastfeeding.

Keywords: breastfeeding, postpartum depression, EPDS

© 2021

Sarah K. Johnson

ALL RIGHTS RESERVED

Dedication

I would like to dedicate this integrative review to my former Mother-Baby Unit colleagues and all the mothers and babies I cared for during my nursing career at Virginia Baptist Hospital. My treasured time there inspired the topic for this project. I hope that this project will provide meaningful evidence for my colleagues to incorporate into practice and will stimulate further research within this arena to continually improve the care of postpartum mothers and babies.

Acknowledgments

I have many wonderful friends and family to thank for helping me get through the last three years of graduate school and this project. I would like to first acknowledge my husband, Alex, who, while being a medical student, provided me with unwavering support as I chased my dreams alongside working full time and becoming a mother. Next, I would like to acknowledge my son, Lincoln, for providing me with unconditional love, joy, and a sense of purpose throughout the last few months and final phases of this project. I would also like to thank my family, particularly my mother and father, who have been supporters, encouragers, and my go-to when I needed time to destress with a weekend getaway home to Kentucky. My project chair, Dr. Moore, provided expert guidance and support with kindness and understanding throughout the development of this integrative review. My friends and coworkers helped me tremendously by switching shifts to accommodate my classes, always understanding when I had to miss something to study or write and being my emotional supporters by always making me laugh and find time to relax. Finally, I would like to acknowledge all the amazing DNP/FNP faculty at Liberty University who have educated me and molded me into an advanced practice nurse while always keeping Christ at the center of my work.

Table of Contents

Abstract	3
Dedication	5
Acknowledgments.....	6
List of Abbreviations	9
Section One: Formulating the Review Question	10
Breastfeeding and Postpartum Depression	10
Background	10
Defining Concepts and Variables	11
Rationale for Conducting the Review.....	12
Purpose of the Integrative Review and Clinical Question	13
Inclusion and Exclusion Criteria.....	14
Conceptual Framework.....	14
Section Two: Comprehensive and Systematic Search.....	15
Information Sources and Search	15
Critical Appraisal	17
Reduction of Bias.....	17
Managing the Collected Data.....	18
Synthesis of Results	18
Summary	19
Section Three: Results	19
Ethical Considerations	20
Timeline	20
Thematic Data Analysis.....	21

Synthesis of Results	33
Section Four: Discussion	36
Summary of Evidence.....	36
Implications for Practice/Future Work	36
Limitations	37
Dissemination	38
Summary	39
References.....	40
Appendix A.....	45
Appendix B	53
Appendix C	54
Appendix D.....	55

List of Abbreviations

American College of Obstetricians and Gynecologists (ACOG)

Association of Women's Health, Obstetrical and Neonatal Nursing

Baby-Friendly Hospital Initiative (BFHI)

Edinburgh Postnatal Depression Scale (EPDS)

International Board-Certified Lactation Consultant (IBCLC)

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

World Health Organization (WHO)

Section One: Formulating the Review Question

Breastfeeding and Postpartum Depression

As mental health awareness and breastfeeding support and encouragement are on the rise within health care in the United States, it is interesting to find that the two factors may influence each other. Within today's society, breastfeeding is highly promoted and encouraged, as there is abundant evidence that supports the idea that breastfeeding is the best method for meeting a child's nutritional needs. Research is ongoing on the relationship between breastfeeding and postpartum depression. Sociocultural implications should be considered in this research, including societal beliefs about breastfeeding, cultural expectations of breastfeeding, and psychosocial effects on the mother. This integrative review aimed to compile the most recent literature on the relationship between breastfeeding and postpartum depression and investigated strategies to decrease postpartum depression within the realm of breastfeeding to provide clear and succinct evidence to health care providers.

Background

Breastfeeding has recently become a significant topic of discussion throughout the country as feminist movements have increased. Aside from the societal-level impacts on mothers, large-scale organizations in the United States also influence the mother's infant feeding method, such as the World Health Organization (WHO) and UNICEF Baby-Friendly Hospital Initiative (BFHI). The BFHI encourages the broad-scale implementation of the "Ten Steps to Successful Breastfeeding and the International Code of Marketing of Breastmilk Substitutes" (Baby-Friendly USA, n.d.). Within designated Baby-Friendly institutions, breastfeeding success rates are regularly calculated, and the staff is evaluated based on the benchmarks set by the Joint Commission and the BFHI to maintain accountability in the implementation of the most current

evidence-based practices. While it is essential to educate patients on the known benefits of breastfeeding and provide support to new breastfeeding mothers, it is imperative for nurses and other health care providers to be aware of the sociocultural pressures new mothers face and to provide psychological support. This integrative review offers health care providers the most recent evidence on the topics of breastfeeding and postpartum depression to promote the best health outcomes for the mother and the child.

Defining Concepts and Variables

The two variables examined in this integrative review were breastfeeding and postpartum depression. The WHO (n.d.) defined exclusive breastfeeding as “no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for six months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals, and medicines)” (para. 3). The WHO (n.d.) noted that predominant breastfeeding means:

The infant’s predominant source of nourishment has been breast milk (including milk expressed or from a wet nurse as the predominant source of nourishment). However, the infant may also have received liquids (water and water-based drinks, fruit juice) ritual fluids and ORS, drops, or syrups (vitamins, minerals, and medicines). (para. 4)

The American College of Obstetricians and Gynecologists (ACOG) defined postpartum depression as “intense feelings of sadness, anxiety, or despair that prevent women from being able to do their daily tasks” (ACOG, 2019, para. 3). The ACOG (2019) also noted that postpartum depression can occur up to one year following childbirth. The most utilized tool to screen for postpartum depression is the Edinburgh Postnatal Depression Scale (EPDS), which is a 10-question, self-report scale completed by the mother (Viguera, 2021). The highest score that can be obtained is 30 (Viguera, 2021). No current consensus exists on an exact score to diagnose

postpartum depression. A score of 11 or higher has been noted to maximize sensitivity and specificity for postpartum depression, though cut-off scores ranging from 10 to 13 have been used by researchers (Viguera, 2021). Each study defines its cut-off score for the EPDS.

Rationale for Conducting the Review

As discussed previously, there may be a significant relationship between breastfeeding and postpartum depression. As the health care industry is focused on evidence-based practice implementation and promotion of best patient outcomes, defining the relationship between breastfeeding and postpartum depression may lead to increased awareness and improved patient outcomes.

Evidence shows that unsuccessful breastfeeding may be associated with higher rates of postpartum depressive symptoms, while successful breastfeeding may be associated with lower rates of postpartum depressive symptoms. Postpartum depression is an encumbering mental disorder that can be successfully treated when identified, and further complications can be avoided (Stewart & Simone, 2016). It is one of the most common obstetrical complications, with about one in eight women experiencing postpartum depression symptoms in the United States (Centers for Disease Control and Prevention, 2020). Its symptoms most commonly include increased sleep disturbances, anxiety, irritability, feelings of being overwhelmed, obsession over the newborn's health and feeding, suicidal ideation, and concerns about harming the newborn (Stewart & Simone, 2016).

Postpartum depression poses a substantial burden within the United States and requires attention. It is the primary reason for hospitalization among 18- to 44-year-old women, aside from obstetrical hospitalizations (Webber & Benedict, 2019). Furthermore, postpartum depression is related to many negative outcomes for both the mother and the infant, including

difficulty bonding, issues in growth and development of the infant, and behavioral disturbances in the infant (Webber & Benedict, 2019). Research has also identified an association between postpartum depression and mental health problems for the infant later in adolescence, even extending into adulthood in some (Webber & Benedict, 2019). These findings demonstrate why continuing research surrounding postpartum depression is a priority.

One noteworthy study from the Department of General Pediatrics and Adolescent Medicine at Johns Hopkins School of Medicine investigated whether meeting prenatal breastfeeding expectations was associated with symptoms of postpartum depression (Gregory et al., 2015). Of the 1,501 participants who intended to exclusively breastfeed and completed the EPDS at two months postpartum, only 589 (39.2%) had met their own expectations for exclusive breastfeeding (Gregory et al., 2015). Of those participants, the EPDS score was 10 or higher for 346 (23.1%) mothers, which classified them as having postpartum depression symptoms (Gregory et al., 2015). The study results showed that among women who intended to breastfeed exclusively, those who met their own expectations had fewer postpartum depressive symptoms at two months postpartum than those who did not meet their own expectations (Gregory et al., 2015). These results depict the significant association between mothers' mental health and breastfeeding. This integrative review will further evaluate the relationship between breastfeeding and postpartum depression.

Purpose of the Integrative Review and Clinical Question

The purpose of this integrative review was to examine the relationship between breastfeeding and postpartum depression to promote the best health outcomes for both the mother and the child. This integrative review aimed to determine whether rates of postpartum depression differ in relation to breastfeeding. An additional goal of the review was to investigate

strategies to decrease postpartum depression as it relates to breastfeeding. The clinical question posed in this integrative review was: In postpartum mothers, does breastfeeding decrease the incidence of postpartum depression?

Inclusion and Exclusion Criteria

Studies met the criteria for inclusion in this integrative review if they were written within the last five years (2016–2021), full text, peer reviewed, and in the English language. Only specific content types were included: articles, dissertation/theses, journals, journal articles, manuscripts, publications, and reports. Additionally, only studies in specific disciplines were included: medicine, nursing, psychology, public health, sciences, and women's studies. Newspaper articles, book reviews, and materials outside of the Jerry Falwell Library collection were excluded. Studies that were not focused specifically on the relationship between breastfeeding and postpartum depression were also excluded.

Conceptual Framework

The Whittemore and Knafl (2005) framework was utilized for this integrative review. This framework includes the following five stages: problem identification, literature search, data evaluation, data analysis, and presentation. In the initial step, problem identification, there is clear identification of the problem and the purpose of the integrative review (Whittemore & Knafl, 2005). Within the literature search stage, precise search strategies are crucial, as incomplete or biased searches may result in erroneous findings. During the third stage, the quality of sources is evaluated. Within the data analysis stage, the data are ordered, coded, categorized, and summarized into a conclusion. The final step includes a presentation of the data and findings reported in either a table or graphic form (Whittemore & Knafl, 2005).

Section Two: Comprehensive and Systematic Search

Information Sources and Search

To begin the literature search, the project leader first accessed the Jerry Falwell Library via www.liberty.edu. Databases were selected which related explicitly to nursing and medical science to ensure that only information in that category would be retrieved. Several databases were utilized in the literature search, including CINAHL, ProQuest, Health Source, and MEDLINE. The terms “breastfeeding” and “postpartum depression” were used to begin the inquiry. When only these two terms were utilized in the search, hundreds of articles populated.

Next, advanced search was utilized, which allowed for further specifications about the type of articles searched. “Full text,” “English language,” “research article,” and “peer reviewed” were selected as filters, and a date range was set to limit the results to studies published within the past five years. This helped to narrow the results to the most relevant articles. The same process was used with each database. After careful search and review by the project leader, 15 pertinent articles remained that were determined to be useful to incorporate in the integrative review.

A second thorough literature review was performed approximately six months following the first review to identify any new evidence and ensure the validity of the initial search. Before the second search was conducted, two articles from the initial search were removed from the literature matrix, as they were from 2015. To ensure the most current evidence, only collected data reported in the past five years was used.

To begin the second literature search, the Jerry Falwell Library was accessed via www.liberty.edu. This time, rather than searching selected individual databases, all databases within the Jerry Falwell Library were searched. Again, advanced search was utilized to allow the

most specific filters to be placed on the search. The search terms included “breastfeeding” and “postpartum depression.” Then, a specified date range, to include only the past five years, February 2016 to February 2021, was added. The filters “full text” and “peer reviewed” were also selected. This yielded 3,650 results. To further narrow the search, the project leader specified the content type, disciplines, and language and added exclusions. In addition, the following content types were included in this search: Article, dissertation/thesis, journal, journal article, manuscript, publication, and report. The following disciplines were included in this search: Medicine, nursing, psychology, public health, sciences, and women’s studies. The only language selected was English. The following exclusions were chosen: Newspaper articles, book reviews, and materials outside of the Jerry Falwell Library collection were excluded. This brought the number of search results down to 3,112.

Multiple results were yielded that were specific to either postpartum depression or breastfeeding but not specific to the relationship between the variables. To narrow this search, the project leader added the search term “relationship,” which brought the number of results down to 2,317. Since the result list was so large, it was sorted by relevance, and the top 500 records were screened for eligibility for inclusion in the integrative review. Of those 500, there were only 31 records that seemed relevant to the search topic and were therefore thoroughly assessed for eligibility. Hundreds of articles were excluded for various reasons. One of the main reasons for exclusion was the inclusion of variables unrelated to the integrative review such as psychosocial factors, delivery method, antenatal health status, pain, use of certain medications during the perinatal period, amount of blood loss at delivery, the total number of children, marital status, immigration status, education level, occupation, age, income, diet, sleep, and

others. The second most common reason for exclusion was the analysis of only one of the variables, breastfeeding or postpartum depression, rather than the relationship between the two.

Critical Appraisal

Many of the 31 articles selected for review were also found in the initial search. Sixteen new articles were discovered in this second search. Sixteen of the total 31 articles reviewed from the initial and final searches were excluded due to irrelevance, bias, or a lack of focus on the relationship between breastfeeding and postpartum depression. A total of 15 articles were chosen to be included in the integrative review. A thorough review of the articles is included in the table of evidence (Appendix A). Melnyk's hierarchy of evidence was utilized for the appraisal of the evidence, and the strength of each source is included in the literature matrix (Melnik & Fineout-Overholt, 2015). Thirteen of the selected articles are Melnyk's Level 4, and two are Melnyk's Level 6. This literature matrix allowed better organization and visualization of the articles. The citation, study purpose, sample characteristics, methods, results, and level evidence are all documented within the matrix, allowing a more efficient review of the articles.

Reduction of Bias

Each article within the literature matrix was assessed for potential sources of bias, including in selection, measurement, attrition, and performance. Concepts of transferability, credibility, dependability, and confirmability were sought within the articles.

A customized form of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) was utilized to lead the literature search. The PRISMA framework includes a 27-item checklist and a four-phase flow diagram (Liberati et al., 2009). The checklist is composed of items considered necessary for transparent reporting (Liberati et al., 2009). A

modified version of the flow diagram was developed to depict the literature search and selection process (Appendix C).

Managing the Collected Data

Throughout the literature search process, the project leader recorded the citations of relevant articles that were to be reviewed. During the initial search phase, the citations were entered into a literature matrix, and later, the researcher filled out the remainder of the table to understand the study's purpose, sample characteristics, methods, results, and level of evidence. This initial literature matrix was saved onto a personal computer. During the second literature search, all relevant articles to be reviewed were cited and listed in a Microsoft Word document. This list was compared to the original literature matrix, and duplicates were eliminated. Following the second literature search, a number of articles were excluded for various reasons as discussed previously. Ultimately, 15 articles remained that were utilized within the literature review. These final 15 articles were then organized into a new literature matrix (Appendix A).

Synthesis of Results

Overall, there seems to be a relationship between breastfeeding and postpartum depression, though it is not clearly defined. Studies showed that women who planned to breastfeed but who were not successful were at highest risk for postpartum depression, that breastfeeding leads to lower postpartum depression scores that increased postpartum depressive symptoms screening throughout the peripartum period led to increased breastfeeding success rates, and that a shorter breastfeeding period was associated with higher rates of postpartum depression.

Summary

Although the literature search was overall positive, it did identify current gaps in evidence regarding the relationship between breastfeeding and postpartum depression. However, many of the studies do show a correlation between breastfeeding and postpartum depression. In some studies, several factors were considered, including postpartum hospital discharge timing, socioeconomic status, breastfeeding intentions before delivery, postpartum weight, maternal mood, and pain. While all these factors are important to consider, including the additional variables does affect the overall results of this review. It would be beneficial for more studies to be performed solely focusing on the two variables of breastfeeding and postpartum depression to strengthen the evidence regarding their direct relationship.

Section Three: Results

This section will review the ethical considerations of the project and a timeline for completion of the project and provide a thematic data analysis of the literature. Upon review of the selected literature, four common themes were identified: the inverse relationship of breastfeeding and postpartum depression, exclusive breastfeeding as a protective factor for postpartum depression, that early initiation and longer duration of breastfeeding decrease the incidence of postpartum depression, and the need for an interdisciplinary approach to the care of and social support for postpartum mothers to achieve optimal health outcomes for both mothers and newborns. The themes are discussed in detail below with recommendations for health care providers. These themes provide evidence-based guidance for caregivers of this patient population in the promotion of quality care.

Ethical Considerations

The project leader and chair completed the Collaborative Institutional Training Initiative modules on biomedical and health science research (Appendix B). The project was submitted to the Liberty University Institutional Review Board, and the leader received approval on March 24, 2021 (Appendix D).

Timeline***Phase One: Proposal Development and Defense***

- I. The project leader will develop, revise, and defend the project proposal by March 24, 2021.
- II. The project leader will select 15–20 peer-reviewed articles to support the project by March 24, 2021.
- III. The project leader will create a tentative timeline with anticipated completion dates of each phase of the project by March 24, 2021.
- IV. The project leader will submit the project to the Institutional Review Board for approval by March 26, 2021.

Phase Two: Project Implementation and Evaluation

- I. The project leader will complete a data summary and analysis report by April 30, 2021.

Phase Three: Final Project and Dissemination

- I. The project leader will complete a first draft of the final project by May 31, 2021.
- II. The project leader will complete revisions of the final project and complete a final defense by July 30, 2021.

Thematic Data Analysis

The following subheadings reflect the recurring themes identified among recent peer-reviewed literature on breastfeeding and postpartum depression. Each theme will be thoroughly discussed with the support of the 15 quality articles that were reviewed for this project. The first theme discussed is the actual nature of the relationship between breastfeeding and postpartum depression, which is the primary focus of the project. The remaining four themes were developed into strategies that may decrease the incidence and prevalence of postpartum depression within the realm of breastfeeding.

Inverse Relationship of Variables

Overall, there is undeniable evidence that breastfeeding and postpartum depression are interrelated. However, the exact relationship between these two variables is difficult to define and understand. The relationship between the two variables is consistently noted as being inverse without a well-defined causation. Chiu et al. (2020) described this relationship as bidirectional, meaning breastfeeding decreases the risk of postpartum depression, and postpartum depression hinders successful breastfeeding. Additionally, while postpartum depression is a risk factor for breastfeeding cessation, having a history of negative breastfeeding experiences can also be a risk factor for postpartum depression (Mikšić et al., 2020).

Reifsnider et al. (2016) noted that while breastfeeding may contribute to a lower incidence of postpartum depression, various risk factors are involved, and therefore the causation is unclear. Woolhouse et al. (2016) similarly stated that their research findings could not draw conclusions about the route of causation between breastfeeding and postpartum depression, though there is a significant relationship between the two concepts. Bascom and Napolitano (2016) described the bidirectional relationship between postpartum depression and breastfeeding,

highlighting the importance of future research in the arena of existing postpartum depressive symptoms at varying time marks to distinguish causation and directionality.

Fostering Exclusive Breastfeeding

Webber and Benedict (2019) cited a 2011 study of 6,410 mothers in which the researchers concluded that exclusive breastfeeding led to lower rates of postpartum depression compared to breastfeeding with supplementation or exclusively formula feeding.

Webber and Benedict (2019) noted that a caveat was identified through a literature search: Breastfeeding is only protective against postpartum depression if it is uncomplicated and successful.

Exclusive breastfeeding may be a protective factor against postpartum depression, as evidenced by an incidence of postpartum depression peaking later postpartum in countries prioritizing exclusive breastfeeding as opposed to countries prioritizing formula feeding (Fiala et al., 2017). Breastfeeding also serves as a biological protective factor against postpartum depression, as it activates the release of oxytocin and prolactin, which are hormones that have antidepressant-like effects (Mohamad Yusuff et al., 2016).

Liu et al. (2017) found that women who exclusively formula fed or performed mixed feeding methods (breast milk and formula) were more prone to postpartum depression compared to women who exclusively breastfed. This relationship has been validated in previous research studies as well and is thought to be due to poor maternal-infant bonding in those who do not exclusively breastfeed (Liu et al., 2017). Contrarily, mothers with postpartum depression may have difficulty bonding with their newborns, which creates a secondary pathway for breastfeeding difficulties, lack of confidence, and dissatisfaction with breastfeeding (Sha et al.,

2019). It is therefore critical for health care providers to deliver comprehensive education on exclusive breastfeeding to prenatal and postpartum mothers (Liu et al., 2017).

Promoting Early Initiation of Breastfeeding

Adjacent to the inverse relationship of breastfeeding and postpartum depression, an inverse relationship between initiation and duration of breastfeeding exists (Webber & Benedict, 2019). Women who experience postpartum depression are less apt to initiate breastfeeding, while a shorter duration of breastfeeding has been associated with higher rates of postpartum depression (Webber & Benedict, 2019).

Liu et al. (2017) identified that mothers who initiated breastfeeding more than two hours postpartum were more likely to formula feed, and those infants had lower weights at four weeks old, which in turn led to increased risk for postpartum depression among mothers. It is essential for health care providers to endorse initiation of breastfeeding within two hours of birth to promote best health outcomes for both the mother and the newborn (Liu et al., 2017).

In addition to early initiation of breastfeeding, skin-to-skin contact between mothers and newborns immediately following birth can also be protective against postpartum depression while conducting successful breastfeeding (Chiu et al., 2020). A recent study found that immediate skin-to-skin contact led to higher successful breastfeeding initiation rates, and breastfeeding self-efficacy was higher in those who engaged in skin-to-skin contact (Chiu et al., 2020).

The BFHI aims to support designated hospitals in providing mothers with education and skills to promote successful breastfeeding (Baby-Friendly USA, n.d.). This initiative has identified 10 steps to promote successful breastfeeding based on evidence, with one being assisting mothers to initiate breastfeeding within one hour of birth, which is often coupled with

immediate skin-to-skin contact (Baby-Friendly USA, n.d.). Importantly, national campaigns such as the BFHI have been found to improve breastfeeding initiation rates more so than duration rates; therefore, identifying variables that may cause early cessation of breastfeeding is crucial (Ritchie-Ewing et al., 2019).

Encouraging Longer Duration of Breastfeeding

In a recent national study including a stratified, random sample of United States mothers, researchers revealed that symptoms of postpartum depression are associated with reduced initiation, duration, and intensity of breastfeeding (Wouk et al., 2017). Sha et al. (2019) concluded that postpartum depressive symptoms were associated with cessation of breastfeeding. Many studies have shown that mothers with postpartum depression are less likely to continue breastfeeding (Sha et al., 2019). The researchers suggested providing targeted support to mothers exhibiting symptoms of postpartum depression to ensure longer duration of breastfeeding, as they are at a higher risk for early cessation (Wouk et al., 2017). A specific model for providing targeted breastfeeding and mental health support to postpartum mothers is discussed below.

A recent prospective cohort study significantly ($p < 0.0303$) revealed that there is a solid relationship between early breastfeeding cessation and postpartum depression (Chiu et al., 2020). A study discovered that women who maintained exclusive breastfeeding for three or more months postpartum had much lower rates of postpartum depression (Dias and Figueiredo et al., 2014 as cited in Chiu et al., 2020). A prospective cohort study performed in Malaysia also found that breastfeeding for at least three months can reduce the risk of postpartum depression (Mohamad Yusuff et al., 2016). Similarly, a 2012 study concluded that mothers who were still breastfeeding at two and four months postpartum had lower scores on the EPDS, while higher scores on the EPDS at two months postpartum could predict lower rates of breastfeeding by four

months postpartum (Hamdan and Tamin, 2012 as cited in Chiu et al., 2020). Another study's results indicated that women who disliked breastfeeding in the first week postpartum had a higher risk of developing postpartum depression by two months postpartum (Watkins et al., 2011 as cited in Chiu et al., 2020).

The research study conducted by Bascom and Napolitano (2016) disclosed that women experiencing symptoms of postpartum depression had a shorter duration of exclusive breastfeeding and higher rates of early cessation. Woolhouse et al. (2016) described their findings of much lower rates of breastfeeding from four to six months postpartum among mothers who reported postpartum depression symptoms at three months. Woolhouse et al. (2016) also found that only 49% of mothers who reported symptoms of postpartum depression at three months were still breastfeeding by six months, while 61% of mothers who had reported no symptoms of postpartum depression were still breastfeeding by six months. These findings highlight the importance of vigilance among health care providers in screening early for postpartum depression to both efficiently identify and treat postpartum depression and to potentially prevent the unnecessary cessation of breastfeeding.

Ritchie-Ewing et al. (2019) performed a nonexperimental data analysis of perinatal women and found that women who breastfed for eight or more weeks postpartum conveyed fewer symptoms of postpartum depression in comparison to mothers who never initiated or stopped breastfeeding in the early postpartum period. The researchers accentuated the role of health care providers in promoting an environment that conduces positive beliefs and attitudes about breastfeeding to improve initiation and duration rates, which would indirectly reduce rates of postpartum depression (Ritchie-Ewing et al., 2019).

Interdisciplinary Approach and Support

Much of the literature describes how an interdisciplinary approach and targeted support for breastfeeding mothers may be beneficial in addressing the relationship between unsuccessful breastfeeding and postpartum depression. The project leader identified five themes among the literature that describe potential pathways for the treatment of postpartum depression within the realm of breastfeeding. Those five themes are discussed within this section and have been developed into recommended action items.

Addressing Breastfeeding Difficulties. Women experiencing breastfeeding complications such as pain, difficult latching, or low milk supply are at higher risk for postpartum depression, and the health care provider must employ prompt and effective screening strategies (Webber & Benedict, 2019). Breastfeeding troubles have been indicated as a great risk factor for postpartum depression (Fiala et al., 2017). Alongside receiving screening for depression, the mother should be supported by caregivers in eliminating these difficulties, and she should be provided adequate support to achieve a successful and uncomplicated breastfeeding experience (Webber & Benedict, 2019). Mothers who have complications related to breastfeeding may also have an infant who is irritable and difficult to console, as he or she may not be receiving adequate nutrition, which leads to further stress and frustration for the mother (Webber & Benedict, 2019). Referral to an International Board-Certified Lactation Consultant (IBCLC) is indicated for the mother experiencing breastfeeding difficulties (Webber & Benedict, 2019). The IBCLC provides expert support to these mothers to ensure successful breastfeeding and thereby decrease the risk for postpartum depression or lessen depressive symptoms if already diagnosed (Webber & Benedict, 2019).

Bascom and Napolitano (2016) conveyed that breastfeeding difficulties are more often reported as the reason for breastfeeding cessation than psychosocial concerns. In this study, 53.9% of women reported a perception that they were not producing enough milk, and 53.6% of women reported that they felt their babies were not satisfied by their breast milk (Bascom & Napolitano, 2016). Brown et al. (2016) also noted that mothers who ceased breastfeeding due to pain or physical difficulties were at the highest risk for postpartum depression. Likewise, Mikšić et al. (2020) reported that women with postpartum depression experienced more difficulties and felt dissatisfaction with breastfeeding. Therefore, Brown et al. (2016) stressed that increased support should be directed toward those mothers who stop breastfeeding due to the physical complications to prevent the development of postpartum depression or at least identify the symptoms early and begin treatment. Again, the researchers underscored the importance of involving an IBCLC to provide the expert education and support to these mothers to prevent early cessation of breastfeeding (Bascom & Napolitano, 2016).

Decreasing Stress. Mothers who experience stressful life events during pregnancy or in the early postpartum period are at an increased risk for postpartum depression (Webber & Benedict, 2019). Inflammation in postpartum mothers associated with impaired sleep patterns, pain, stress, and trauma from birth also place mothers at an increased risk for postpartum depression. Webber and Benedict (2019) discussed a 2013 study that described how breastfeeding provides hormonal protection for postpartum depression. Breastfeeding has been linked to lessened stress responses, particularly cortisol responses, which leads to fewer symptoms of postpartum depression (Webber & Benedict, 2019). Multiple research studies have found that breastfeeding is associated with decreased feelings of negativity and a decreased perception of stress (Webber & Benedict, 2019).

Many studies reference a triad of postpartum depression, stress, and breastfeeding, with each variable influencing the other. Gila-Díaz et al. (2020) presented data that suggested a relationship between these three variables. Their studies demonstrated that maternal stress increased in the third month of breastfeeding, when maternity leave was ending, as this was when stress related to conflicts among work and family matters appeared (Gila-Díaz et al., 2020). They noted that exclusive breastfeeding may reduce maternal stress through biologic mechanisms that improve her mood. They suggested further research to add clarity to the effect of exclusive breastfeeding on maternal mood (Gila-Díaz et al., 2020).

Mohamad Yusuff et al. (2016) presented data that revealed that breastfeeding is related to reduced reactivity to stressors among mothers, meaning the stress response may be attenuated in those women who breastfeed. In turn, this reduction in the stress response potentially protects the mother from issues with milk production, energy deprivation, and behaviors related to stress (Mohamad Yusuff et al., 2016). Avoiding those factors related to stress also is protective against postpartum depression, as those factors have been indicated in the relationship between breastfeeding and postpartum depression. Therefore, promoting breastfeeding alone can aid indirectly in the reduction of postpartum depression.

Promoting Breastfeeding Self-Efficacy. Mikšić et al. (2020) wrote that self-efficacy establishes whether mothers will initiate breastfeeding, the duration of breastfeeding, and mothers' emotional response to any complications that arise. A mother's self-efficacy may be influenced by past experiences, indirect experiences, cultural beliefs, emotions, pain, fatigue, stress response, and anxiety (Mikšić et al., 2020). Women who are at highest risk for postpartum depression have low breastfeeding self-efficacy, according to current research (Sahin, 2019). It has also been found that women with high breastfeeding self-efficacy scores experienced lower

rates of postpartum depression (Sahin, 2019). A number of recent research studies support this trend in the relationship between breastfeeding self-efficacy and postpartum depression. Sahin (2019) therefore emphasized the importance of early detection of postpartum depression through screening using a validated tool such as the EPDS as well as targeting women with low breastfeeding self-efficacy scores for postpartum depression treatment sooner.

Chiu et al. (2020) discussed how breastfeeding self-efficacy can be a protective factor against postpartum depression. The goals and expectations around breastfeeding among mothers play pivotal roles in breastfeeding success and the development of postpartum depression. Recent research indicates that women who had intentions to breastfeed and were then successful in breastfeeding had the lowest risk of postpartum depression (Chiu et al., 2020). Correspondingly, women with the highest risk of postpartum depression were those who planned to breastfeed but were unsuccessful (Chiu et al., 2020). In addition, women with postpartum depression may have less self-confidence in their breastfeeding capabilities, as evidenced by higher breastfeeding self-efficacy scores in women who exclusively breastfed and lower scores in those with higher EPDS scores (Chiu et al., 2020).

Bascom and Napolitano (2016) also illustrated that breastfeeding intentions were a substantial predictor of breastfeeding duration, thereby emphasizing the significance of discussion of intentions and accurate education of the importance of breastfeeding. The researchers noted that interventions targeted at increasing breastfeeding self-efficacy among those mothers at risk for postpartum depression could be beneficial (Bascom & Napolitano, 2016).

Providing Targeted Support. Low levels of social support are a risk factor associated with postpartum depression (Webber & Benedict, 2019). A multidisciplinary approach to the

care of this population protects of maternal-newborn bonding, promotes the health and happiness of both the mother and newborn, and most effectively prevents postpartum depression and its detrimental sequelae (Webber & Benedict, 2019). One multidisciplinary model proposed in the literature, termed the “trifecta approach,” entails a team of a pediatrician, an IBCLC, and a clinical psychologist (Bunik et al., 2014, as cited in Webber & Benedict, 2019). The trifecta approach addresses operative breastfeeding needs, psychosocial challenges, and medical supervision of the mother and newborn through an interdisciplinary team with the goal of promoting the well-being of the mother-newborn dyad (Buchholz et al., 2016). Each clinician has a defined role within the team (Webber & Benedict, 2019). Webber and Benedict (2019) note that advanced practice registered nurses such as pediatric and family nurse practitioners may also be included in this model and would play a beneficial role.

The trifecta approach has served 559 families since it was formed by the Breastfeeding Management Clinic at Children’s Hospital Colorado in 2011. The mean number of visits per family to the clinic is 1.65; some families only visit once, and others require multiple visits with the team (Buchholz et al., 2016). Buchholz et al. (2016) noted that screening for postpartum depression using the EPDS is a vital piece of the model; however, it is only a screening tool and therefore the influence of breastfeeding difficulties on the mother’s mood and her relationship with her newborn is always discussed with each family. This allows open communication among the patient and team members regarding feeding patterns and difficulties, infant bonding, maternal mood, and infant development (Buchholz et al., 2016). Participants of the clinic complete a phone survey after their visit to evaluate their satisfaction, and 74% of families have reported an excellent overall experience, while 83% of families have reported that the psychologist was a helpful or very helpful component of their visit (Buchholz et al., 2016).

Mikšić et al. (2020) identified times throughout the postpartum period that are pivotal to provide support to breastfeeding mothers, as these periods are when she will most likely make decisions about initiation, continuation, and cessation. These periods are the first 24 hours after birth, one to two weeks after birth, four to six months after birth, and 12 months after birth. Understanding the importance of these time periods will assist health care providers in targeting additional resources for encouragement, education, and support.

Reifsnider et al. (2016) wrote that nurses who provide care to this population should deliver clear instructions and education on breastfeeding while also focusing on emotional support of the postpartum mother. Gila-Díaz et al. (2020) reported that mothers experience psychological distress when faced with breastfeeding difficulties, intense social pressure to breastfeed, and feelings of guilt and loneliness leading to defeat. These mothers require unwavering social, emotional, and psychological support from health care providers, partners, family, friends, and external sources, as mothers who lack support have more difficulty coping with these challenges (Gila-Díaz et al., 2020). Empathy from the nurse paired with therapeutic communication strategies can help to alleviate these mothers' negative feelings toward breastfeeding by helping them to feel understood and supported (Gila-Díaz et al., 2020). Nurse leaders may also seek to support these mothers in an indirect manner by proposing changes to health policies such as by advocating for extended paid maternity leave (Gila-Díaz et al., 2020).

Ritchie-Ewing et al. (2019) addressed is the importance for health care providers to be mindful of breastfeeding and cultural expectations among diverse populations in the delivery of holistic and empathetic care. Clinicians must be mindful of the culture and beliefs of the population to which they are providing care to effectively promote the patients' health and well-being without insulting or degrading their belief system. Sha et al. (2019) pointed out that

women with low socioeconomic status are at an increased risk for postpartum depression and should be targeted with specific interventions (e.g., psychosocial assessments, social support from professionals and peers) to prevent the development of depressive symptoms.

Postpartum breastfeeding mothers need the support of not only health care personnel, but also of family, friends, and counselors to prevent postpartum depression (Fiala et al., 2017). Gila-Díaz et al. (2020) endorsed the importance of social support from partners and other family members to induce high rates of exclusive breastfeeding. Mothers may also seek external support through breastfeeding support associations, forums, and social networks (Gila-Díaz et al., 2020). The health care provider can assist mothers with identifying available resources throughout their own community and encouraging engagement with those resources.

Early Detection Through Screening. Early detection of postpartum depression using validated screening tools is essential for positive health outcomes among mothers. Sahin (2019) discussed, upon analysis of research results, that early detection of postpartum depression is crucial to reduce the morbidity associated with postpartum depression and to lengthen the duration of breastfeeding among mothers. Postpartum depression remains undetected in nearly half of women who experience it, and therefore, these women are neglected treatment and support (Webber & Benedict, 2019). Various reasons have been hypothesized for this large gap in the diagnosis of postpartum depression, including the mother not recognizing her symptoms as postpartum depression and the mother's reluctance to share her feelings in fear of embarrassment related to the social stigma surrounding depression (Webber & Benedict, 2019).

Bascom and Napolitano (2016) emphasized that the EPDS or another validated screening tool should be implemented in prenatal, postpartum, and pediatric visits to identify those women who have undetected postpartum depressive symptoms and to decrease the overall prevalence of

postpartum depression. The Association of Women's Health, Obstetrical and Neonatal Nursing recommends screening all pregnant and postpartum women for postpartum depression (Webber & Benedict, 2019). The United States Preventive Services Task Force validates the EPDS as the recommended screening tool for postpartum depression (Webber & Benedict, 2019).

Synthesis of Results

The inverse nature of the relationship between breastfeeding and postpartum depression makes it difficult to target specific interventions to decrease the prevalence of postpartum depression. Since the relationship is considered bidirectional, interventions must be well-balanced and based on scientific evidence. The multifactorial nature of the causation of postpartum depression also makes it difficult to delineate exactly how breastfeeding may protect against it. The most common themes within recent evidence regarding breastfeeding and postpartum depression have been reviewed, and suggestions for practice and future research have been identified.

Many researchers have found that exclusive breastfeeding may be a protective factor against postpartum depression. Researchers believe reasons for this effect are the release of oxytocin and prolactin hormones and stronger maternal-infant bonding. However, researchers have also noted that exclusive breastfeeding may only be protective when it is successful, as unsuccessful exclusive breastfeeding may have the opposite effect on postpartum depression. This finding stresses the need for not only promoting exclusive breastfeeding practices but providing the essential support to those mothers to guide them toward a successful outcome.

Large amounts of solid evidence exist surrounding the best practice of early initiation of breastfeeding. In addition to the long list of benefits early initiation provides, it can also be viewed as a protective factor against postpartum depression. Skin-to-skin contact between

mothers and newborns immediately following birth helps with bonding, temperature regulation, and breastfeeding initiation. Evidence shows that initiating breastfeeding within two hours of birth may lead to more successful breastfeeding, longer duration of breastfeeding, and healthier newborn outcomes. BFHIs strive to create environments that are more conducive to early skin-to-skin contact and initiation of breastfeeding. Hospital staff must be educated properly on breastfeeding initiation, techniques for assisting with the first latch, and problem-solving skills for when difficulties arise.

In addition to the inverse nature of the relationship between breastfeeding and postpartum depression, there has also been an inverse relationship noticed between postpartum depression and the duration of breastfeeding. Evidence conveys that mothers with postpartum depression are less likely to initiate breastfeeding, while those who stop breastfeeding early are at an increased risk for postpartum depression. Mothers need education and support to have a successful and long-lasting breastfeeding experience. Health care providers must also be diligent in identifying potential causes of early breastfeeding cessation and addressing those concerns promptly.

It is essential for health care providers to understand the relationship between breastfeeding and postpartum depression to best support mothers in their feeding practices and mental health. Targeted social, emotional, and physical support is needed from interdisciplinary health care team members as well as the community, family, and friends of the mother. The expertise of an IBCLC should be available at all birthing centers and hospitals to support mothers as well as staff members. Many mothers have reported that their primary reason for breastfeeding cessation was related to breastfeeding difficulties more so than any other reason. The IBCLC can help mitigate breastfeeding difficulties while the mother and newborn are hospitalized, as well as plan for follow-ups upon hospital discharge.

Maternal stress and low breastfeeding self-efficacy have also been indicated as contributors to postpartum depression. Mothers who are experiencing stressful life events at the time of pregnancy and postpartum are at higher risk for postpartum depression and breastfeeding cessation. Likewise, mothers who have low self-efficacy for breastfeeding are more likely to not initiate breastfeeding or to stop breastfeeding early. Furthermore, a mother's self-efficacy can be impacted by her levels of stress. Those with high self-efficacy may be protected against postpartum depression. Mothers who have low self-efficacy and high levels of stress should be identified as at risk for postpartum depression and screened sooner. Health care providers should assist mothers decrease their stress levels and promote self-efficacy prenatally. Providers should also address each mother's intentions regarding postpartum feeding practices, as women who intend to breastfeed but are unsuccessful are at the highest risk for postpartum depression. Those intending to exclusively breastfeed prenatally need targeted education and support from providers, family, friends, and partners.

Possibly the most critical element in decreasing the prevalence of postpartum depression is early detection through screening. An astonishing percentage of cases of postpartum depression go undetected. The EPDS is a validated screening tool that should be used by health care providers postpartum to help identify those with postpartum depression and to assist in relieving symptoms through treatment. The EPDS can be integrated into hospital postpartum care, follow-up appointments, and pediatric follow-ups for the newborn. The mother's mental health should be on every provider's radar, as her health outcomes also directly impact the health, safety, and well-being of her newborn.

Section Four: Discussion

Summary of Evidence

Vast evidence establishes that there is certainly a relationship between breastfeeding and postpartum depression, though the exact causation is still in question. An inverse relationship exists between breastfeeding and postpartum depression: Breastfeeding may protect women from postpartum depression, but women with postpartum depression are less likely to have a successful breastfeeding experience. Common themes among the literature have been reviewed and transformed by the project leader into action items for health care providers to assist in decreasing the prevalence of postpartum depression. In review, those items include fostering exclusive breastfeeding, promoting early initiation of breastfeeding, encouraging longer duration of breastfeeding, and implementing an interdisciplinary approach while providing emotional, social, and psychological support to mothers. The action items are fully detailed in the third section of this paper.

Implications for Practice/Future Work

The literature demonstrates a compelling need to perform more research surrounding the relationship between breastfeeding and postpartum depression to wholly understand all implications of postpartum depression and to decrease its incidence and prevalence among mothers. Maternal mental health is a vital factor in the health and well-being of the mother-infant dyad. A mother's mental health not only affects her health outcomes, but it also directly affects the welfare of her child.

Caregivers of this patient population may adapt the summary of this data into their own practice in the form of an evidence-based practice project. For example, the trifecta approach may be implemented as part of a project in an organization that does not currently have that type

of structure in place. Organizations not currently designated as Baby-Friendly may strive to achieve that designation to assist mothers and staff in the success of breastfeeding. IBCLCs may be integrated into care areas where they are lacking to provide expert support and education. Postpartum depression screening practices may be implemented or adjusted to match current recommendations from governing bodies to detect those with postpartum depressive symptoms sooner. Various opportunities exist for evidence-based practice improvements among organizations throughout the United States, and this integrative review may provide the necessary background information and spark motivation to initiate projects.

Throughout the literature, it is noted repeatedly that the direct causation between breastfeeding and postpartum depression has not been identified. Caregivers have the opportunity to research these themes further with high-quality data collection methods to better understand the relationship among variables and to provide an enhanced definition of the relationship between breastfeeding and postpartum depression based on scientific evidence. Identifying the cause will help mitigate the problem, thereby decreasing the prevalence of postpartum depression and improving health outcomes for mothers and infants. Research may include validating the EPDS as a screening method for postpartum depression and developing consensus on the cut-off score for diagnosis, as discussed in the next section. Using a well-validated screening method and having consistency among the cut-off scores for diagnosing postpartum depression will improve future research efforts as well as assist providers in the management of mothers with postpartum depression.

Limitations

While there were limitations of each individual study included in the literature review for this paper, the overwhelming limitation noted by the project leader for this integrative review is

the validity of and consistency in the use of postpartum depression screening tools. Most studies utilized the EPDS, apart from two studies, but cut-off scores for postpartum depression varied greatly. Since there is no consensus on an EPDS cut-off score to diagnose postpartum depression, each study defined their own cut-off score, and the scores ranged from eight to 13. Some researchers even included specific variations in the use of the EPDS, which raises the question of validity of the tool used. To provide quality results, there needs to be standardization of the EPDS cut-off scores as well as the use of the EPDS in the validated format.

Another limitation of this integrative review is the selection process of the literature. As detailed in Section Two of this paper, the literature search was somewhat flawed. A total of 2,317 articles resulted from the very specific literature search, but only the top 500 most relevant articles were considered for inclusion, as the Jerry Falwell Library ended the results list at 500. Nonetheless, the Jerry Falwell Library does include many databases, which increased the validity of the literature search, as opposed to individual searches of a small number of databases. The Jerry Falwell Library also automatically filtered out duplicates among the databases, which would have needed to be done manually otherwise. In future projects on this topic, the project leader would seek avenues to ensure all the current evidence is reviewed and considered for inclusion.

Dissemination

The project leader intends to submit this integrative review as a manuscript for publication in either the *American Journal of Maternal/Child Nursing* or the *Journal of Obstetric, Gynecologic, and Neonatal Nursing*. Both journals are peer reviewed and accept clinical articles such as this for publication. Both journals target an audience of caregivers practicing in the field of maternal-newborn care including obstetricians, gynecologists,

midwives, and registered nurses practicing in maternal, newborn, or neonatal care. This population is essential to target with this topic; however, other caregivers such as primary care providers and pediatricians should also be aware of the findings of any research regarding this topic. Therefore, any further research studies or projects on this topic by this project leader may be disseminated via another route to expand the target audience.

Summary

Maternal mental health is a health care priority, and all variables contributing to postpartum depression should be recognized. Breastfeeding and postpartum depression are inversely related, and the exact causation between the two variables remains unknown. Suggested action items have been displayed by the project leader following a thematic data analysis of the literature. The action items are available for caregivers to implement in their own practice as well as to guide future research to decrease the prevalence of postpartum depression. The limitations of this integrative review should also be considered by caregivers who conduct further research to develop high-quality evidence for practice.

References

- The American College of Obstetricians and Gynecologists. (2019). *Postpartum depression*.
<https://www.acog.org/womens-health/faqs/postpartum-depression>
- Baby-Friendly USA. (n.d.). *About us*. Retrieved January 29, 2021, from
<https://www.babyfriendlyusa.org/about-us>
- Bascom, E. M., & Napolitano, M. A. (2016). Breastfeeding duration and primary reasons for breastfeeding cessation among women with postpartum depressive symptoms. *Journal of Human Lactation*, 32(2), 282–291. <https://doi.org/10.1177/0890334415619908>
- Brown, A., Rance, J., & Bennett, P. (2016). Understanding the relationship between breastfeeding and postnatal depression: The role of pain and physical difficulties. *Journal of Advanced Nursing*, 72(2), 273–282. <https://doi.org/10.1111/jan.12832>
- Buchholz, M., Dunn, D. M., Watkins, L., & Bunik, M. (2016). Integrating infant mental health with breastfeeding support: Five years of the trifecta approach. *Newborn and Infant Nursing Reviews*, 16(4), 29–97. <https://doi.org/10.1053/j.nainr.2016.09.004>
- Bunik, M., Dunn, D. M., Watkins, L., & Talmi, A. (2014). Trifecta approach to breastfeeding: Clinical care in the integrated mental health model. *Journal of Human Lactation*, 30(2), 143–147. <https://doi.org/10.1177/0890334414523333>
- Centers for Disease Control and Prevention. (2020). *Depression among women*.
<https://www.cdc.gov/reproductivehealth/depression/index.htm>
- Chiu, H.-C., Wang, H.-Y., Hsiao, J.-C., Tzeng, I.-S., Yiang, G.-T., Wu, M.-Y., & Chang, Y.-K. (2020). Early breastfeeding is associated with low risk of postpartum depression in Taiwanese women. *Journal of Obstetrics & Gynaecology*, 40(2), 160–166.
<https://doi.org/10.1080/01443615.2019.1603216>

- Dias, C. C., & Figueiredo, B. (2015). Breastfeeding and depression: A systematic review of the literature. *Journal of Affective Disorders*, 171, 142–154.
<https://doi.org/10.1016/j.jad.2014.09.022>
- Fiala, A., Švancara, J., Klánová, J., & Kašpárek, T. (2017). Sociodemographic and delivery risk factors for developing postpartum depression in a sample of 3233 mothers from the Czech ELSPAC study. *BMC Psychiatry*, 17(1), Article 104.
<https://doi.org/10.1186/s12888-017-1261-y>
- Gila-Díaz, A., Carrillo, G. H., López de Pablo, Á. L., Arribas, S. M., & Ramiro-Cortijo, D. (2020). Association between maternal postpartum depression, stress, optimism, and breastfeeding pattern in the first six months. *International Journal of Environmental Research and Public Health*, 17(19), Article 7153.
<https://doi.org/10.3390/ijerph17197153>
- Gregory, E. F., Butz, A. M., Ghazarion, S. R., Gross, S. M., & Johnson, S. B. (2015). Are unmet breastfeeding expectations associated with maternal depressive symptoms? *Academic Pediatrics*, 15(3), 319–325. <https://doi.org/10.1016/j.acap.2014.12.003>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Medicine*, 6(7), Article e1000100.
<https://doi.org/10.1371/journal.pmed.1000100>
- Liu, S., Yan, Y., Gao, X., Xiang, S., Sha, T., Zeng, G., & He, Q. (2017). Risk factors for postpartum depression among Chinese women: Path model analysis. *BMC Pregnancy and Childbirth*, 17(1), Article 133. <https://doi.org/10.1186/s12884-017-1320-x>

- Melnyk, B. M., & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing and healthcare: A guide to best practice* (3rd ed.). Wolters Kluwer Health.
- Mikšić, Š., Uglešić, B., Jakab, J., Holik, D., Milostić Srb, A., & Degmečić, D. (2020). Positive effect of breastfeeding on child development, anxiety, and postpartum depression. *International Journal of Environmental Research and Public Health*, 17(8), Article 2725. <https://doi.org/10.3390/ijerph17082725>
- Mohamad Yusuff, A. S., Tang, L., Binns, C. W., & Lee, A. H. (2016). Breastfeeding and postnatal depression. *Journal of Human Lactation*, 32(2), 277–281. <https://doi.org/10.1177/0890334415620788>
- Reifsnider, E., Flowers, J., Todd, M., Bever Babendure, J., & Moramarco, M. (2016). The relationship among breastfeeding, postpartum depression, and postpartum weight in Mexican American women. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 45(6), 760–771. <https://doi.org/10.1016/j.jogn.2016.05.009>
- Ritchie-Ewing, G., Mitchell, A. M., & Christian, L. M. (2019). Associations of maternal beliefs and distress in pregnancy and postpartum with breastfeeding initiation and early cessation. *Journal of Human Lactation*, 35(1), 49–58. <https://doi.org/10.1177/0890334418767832>
- Sahin, B. M. (2019). The relationship between breastfeeding self-efficacy and depression in the early postpartum period in Turkey. *International Journal of Caring Sciences*, 12(2), 729–736. http://www.internationaljournalofcaringsciences.org/docs/15_sahin_original_12_2.pdf
- Sha, T., Gao, X., Chen, C., Li, L., Cheng, G., Wu, X., Tian, Q., Yang, F., He, Q., & Yan, Y. (2019). A prospective study of maternal postnatal depressive symptoms with infant-

- feeding practices in a Chinese birth cohort. *BMC Pregnancy and Childbirth*, 19(1), Article 388. <https://doi.org/10.1186/s12884-019-2559-1>
- Stewart, D. E., & Simone, V. (2016). Postpartum depression. *The New England Journal of Medicine*, 375(22), 2177–2186. <https://doi.org/10.1056/NEJMcp1607649>
- Viguera, A. (2021). Postpartum unipolar major depression: Epidemiology, clinical features, assessment, and diagnosis. *UpToDate*. Retrieved January 29, 2021 from <https://www.uptodate.com/contents/postpartum-unipolar-major-depression-epidemiology-clinical-features-assessment-and-diagnosis>
- Watkins, S., Meltzer-Brody, S., Zolnoun, D., & Stuebe, A. (2011). Early breastfeeding experiences and postpartum depression. *Obstetrics and Gynecology*, 118, 214–221. <https://doi.org/10.1097/AOG.0b013e3182260a2d>
- Webber, E., & Benedict, J. (2019). Postpartum depression: A multi-disciplinary approach to screening, management and breastfeeding support. *Archives of Psychiatric Nursing*, 33(3), 284–289. <https://doi.org/10.1016/j.apnu.2019.01.008>
- Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, 52(5), 546–553. <https://doi.org/10.1111/j.1365-2648.2005.03621.x>
- Woolhouse, H., James, J., Gartland, D., McDonald, E., & Brown, S. J. (2016). Maternal depressive symptoms at three months postpartum and breastfeeding rates at six months postpartum: Implications for primary care in a prospective cohort study of primiparous women in Australia. *Women and Birth: Journal of the Australian College of Midwives*, 29(4), 381–387. <https://doi.org/10.1016/j.wombi.2016.05.008>
- World Health Organization. (n.d.). *Nutrition*. Retrieved January 29, 2021, from https://www.who.int/nutrition/topics/infantfeeding_recommendation/en/

Wouk, K., Stuebe, A., & Meltzer-Brody, S. (2017). Postpartum mental health and breastfeeding practices: An analysis using the 2010-2011 pregnancy risk assessment monitoring system. *Maternal & Child Health Journal*, 21(3), 636–647.
<https://doi.org/10.1007/s10995-016-2150-6>

Appendix A

Strength of Evidence Table

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnik Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Bascom, E. M., & Napolitano, M. A. (2016). Breastfeeding duration and primary reasons for breastfeeding cessation among women with postpartum depressive symptoms. <i>Journal of Human Lactation</i> , 32(2), 282–291. https://doi.org/10.1177/0890334415619908	To examine the relationship between breastfeeding and postpartum depressive symptoms and identify possible reasons for early breastfeeding cessation	4,902 pregnant women over 18 years of age, healthy, and expecting a singleton birth from the Infant Feeding Practices Study 2	Retrospective cohort	Increased postpartum depression screening during pre- and postnatal visits and lactation support may better address the high rates of postpartum depression and poor breastfeeding outcomes	Level 4	Potential confounding	Yes, the results showed that increased postpartum depression screening throughout the peripartum period was related to lower breastfeeding cessation rates
Brown, A., Rance, J., & Bennett, P. (2016). Understanding the relationship between breastfeeding and postnatal depression: The role of pain and physical difficulties. <i>Journal of Advanced Nursing</i> , 72(2), 273–282. https://doi.org/10.1111/jan.12832	To examine the relationship between reasons for cessation of breastfeeding and postpartum depression	217 women with an infant aged 0-6 months who had started breastfeeding at birth but had stopped before 6 months	Cross-sectional study	Shorter breastfeeding duration was associated with higher rates of postpartum depressive symptoms	Level 4	Small sample size	Yes, it could potentially be used as it establishes a relationship between the two factors

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Chiu, H.-C., Wang, H.-Y., Hsiao, J.-C., Tzeng, I.-S., Yiang, G.-T., Wu, M.-Y., & Chang, Y.-K. (2020). Early breastfeeding is associated with low risk of postpartum depression in Taiwanese women. <i>Journal of Obstetrics & Gynaecology</i> , 40(2), 160–166. https://doi.org/10.1080/01443615.2019.1603216	To examine the relationship between breastfeeding and postpartum depression	333 Taiwanese pregnant women	Correlational design	Higher EPDS scores were associated with lower rates of breastfeeding	Level 4	Limited sample	Yes, this study's results are very relative and important for my topic
Fiala, A., Švancara, J., Klánová, J., & Kašpárek, T. (2017). Sociodemographic and delivery risk factors for developing postpartum depression in a sample of 3233 mothers from the Czech ELSPAC study. <i>BMC Psychiatry</i> , 17(1), Article 104. https://doi.org/10.1186/s12888-017-1261-y	To identify risk factors for postpartum depression	Sample of 7,589 women from the Czech version of the European Longitudinal Study of Pregnancy and Childhood (ELSPAC)	Longitudinal prospective cohort study	Many risk factors for postpartum depression were identified, including women who chose not to breastfeed	Level 4	The ELSPAC study has a large participant drop-out rate	Yes, this study defines a relationship between breastfeeding and postpartum depression, which helps in answering the posed question
Gila-Díaz, A., Carrillo, G. H., López de Pablo, Á. L., Arribas, S. M., & Ramiro-Cortijo, D. (2020). Association between maternal postpartum depression, stress, optimism,	To determine if breastfeeding pattern (exclusive or mixed) is associated with stress,	711 women living in Spain who had an infant 0-6 months of age	Cross-sectional study	Breastfeeding has positive psychological impacts on mothers, though early cessation is	Level 4	Limited sample	Yes, it defines a clear relationship between breastfeeding

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
and breastfeeding pattern in the first six months. <i>International Journal of Environmental Research and Public Health</i> , 17(19), Article 7153. https://doi.org/10.3390/ijerph17197153	depression, and optimism			associated with an increased risk for postpartum depression			and maternal mental health
Liu, S., Yan, Y., Gao, X., Xiang, S., Sha, T., Zeng, G., & He, Q. (2017). Risk factors for postpartum depression among Chinese women: Path model analysis. <i>BMC Pregnancy and Childbirth</i> , 17(1), Article 133. https://doi.org/10.1186/s12884-017-1320-x	To identify risk factors for postpartum depression	A sample of mothers from a cross-sectional study who had a live birth and had no history of mental health diagnoses	Correlational design	Method of feeding and infant weight at 4 weeks postpartum has a direct impact on postpartum depression	Level 4	Limited sample	Yes, this study defines a relationship between method of feeding and postpartum depression
Mikšić, Š., Uglešić, B., Jakab, J., Holik, D., Milostić Srb, A., & Degmečić, D. (2020). Positive effect of breastfeeding on child development, anxiety, and postpartum depression. <i>International Journal of Environmental Research and Public Health</i> , 17(8), Article 2725.	To examine the relationship between postpartum depression, breastfeeding, and child development	209 women who were in the last trimester of pregnancy, within 1 week postpartum, and 90 days postpartum	Prospective cohort study	Women who do not breastfeed have higher rates of postpartum depression and anxiety	Level 4	Participant drop-out	Yes, this study again shows the inverse relationship between breastfeeding and postpartum depression: Exclusive breastfeeding

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
https://doi.org/10.3390/ijerph17082725							is associated with lower rates of depression, though cessation of breastfeeding /not initiating breastfeeding is associated with higher rates of postpartum depression
Mohamad Yusuff, A. S., Tang, L., Binns, C. W., & Lee, A. H. (2016). Breastfeeding and postnatal depression. <i>Journal of Human Lactation</i> , 32(2), 277–281. https://doi.org/10.1177/0890334415620788	To examine the relationship between breastfeeding at 3 months postpartum and postpartum depression	2,072 women who were 36-38 weeks' gestation at the start of the study	Prospective cohort study; descriptive	Exclusive breastfeeding appears to be associated with lower rates of postpartum depression	Level 6	None noted	Yes, it shows a positive relationship between breastfeeding and postpartum depression
Reifsnider, E., Flowers, J., Todd, M., Bever Babendure, J., & Moramarco, M. (2016). The relationship among breastfeeding, postpartum depression, and postpartum weight in Mexican American women. <i>Journal</i>	To determine if postpartum depressive symptoms and weight are related to breastfeeding	150 Hispanic pregnant women	Correlational design	Breastfeeding contributed to lower postpartum depression scores and significantly lower	Level 4	Limited sample, reduces generalizability	Yes, although it does include a third factor, weight, there is still a noted association

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
<i>of Obstetric, Gynecologic & Neonatal Nursing</i> , 45(6), 760–771. https://doi.org/10.1016/j.jogn.2016.05.009				postpartum weight			between breastfeeding and PPD
Ritchie-Ewing, G., Mitchell, A. M., & Christian, L. M. (2019). Associations of maternal beliefs and distress in pregnancy and postpartum with breastfeeding initiation and early cessation. <i>Journal of Human Lactation</i> , 35(1), 49–58. https://doi.org/10.1177/0890334418767832	To determine if prenatal beliefs about breastfeeding and mental distress during and after pregnancy were associated with breastfeeding initiation and cessation rates	70 pregnant women during four perinatal visits (early, mid, and late pregnancy and 7-10 weeks postpartum)	Correlational design	Mothers were breastfeed for more than 8 weeks postpartum weeks reported less general anxiety and depressive symptoms than those who discontinued or never initiated breastfeeding	Level 4	Small sample size	Yes, it could be used, as it showed a relationship between breastfeeding and postpartum depression
Sahin, B. M. (2019). The relationship between breastfeeding self-efficacy and depression in the early postpartum period in Turkey. <i>International Journal of Caring Sciences</i> , 12(2), 729–736.	To examine the relationship between mothers' breastfeeding self-efficacy and postpartum depression	357 primiparous and multiparous mothers 18 years and older who had a singleton birth, breastfed, and	Correlational design	Women with higher rates of breastfeeding self-efficacy had lower rates of postpartum depression	Level 4	Relatively small sample	Yes, as a relationship between PPD and breastfeeding was defined

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
http://www.internationaljournalofcaringsciences.org/docs/15_sahin_original_12_2.pdf		had no history of mental illness					
Sha, T., Gao, X., Chen, C., Li, L., Cheng, G., Wu, X., Tian, Q., Yang, F., He, Q., & Yan, Y. (2019). A prospective study of maternal postnatal depressive symptoms with infant-feeding practices in a Chinese birth cohort. <i>BMC Pregnancy and Childbirth</i> , 19(1), Article 388. https://doi.org/10.1186/s12884-019-2559-1	To investigate the relationship between postpartum depressive symptoms and infant feeding methods	Based on a current cohort study being performed in 3 community health centers in China; Participants had a live birth and no history of mental illness	Prospective cohort study	Mothers with postpartum depressive symptoms were associated with cessation of breastfeeding and were more likely to supplement with formula	Level 4	Homogenous sample, postpartum depressive symptoms were based on mother's self-report	Yes, it defines a relationship between breastfeeding and postpartum depression
Webber, E., & Benedict, J. (2019). Postpartum depression: A multi-disciplinary approach to screening, management and breastfeeding support. <i>Archives of Psychiatric Nursing</i> , 33(3), 284–289. https://doi.org/10.1016/j.apn.2019.01.008	To describe the relationship between inflammation, breastfeeding and postpartum depression; postpartum depression's effect on infant health; the importance of successful breastfeeding for mother and infant	Meta-analysis of various studies	Correlational design	Breastfeeding and postpartum depression have an inverse relationship: Women with postpartum depression are less likely to have a positive breastfeeding experience,	Level 4	This is not a study; It is a review of current evidence	Yes, it defines an inverse relationship between breastfeeding and postpartum depression which is relevant to answering the posed question

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
				while long-term successful breastfeeding is associated with lower rates of postpartum depression			
Woolhouse, H., James, J., Gartland, D., McDonald, E., & Brown, S. J. (2016). Maternal depressive symptoms at three months postpartum and breastfeeding rates at six months postpartum: Implications for primary care in a prospective cohort study of primiparous women in Australia. <i>Women and Birth: Journal of the Australian College of Midwives</i> , 29(4), 381–387. https://doi.org/10.1016/j.wombi.2016.05.008	To examine the relationship between maternal depressive symptoms and breastfeeding in the first 6 months postpartum	1,507 nulliparous and 18 years or older women	Prospective cohort study	Women reporting postpartum depressive symptoms at 3 months had much lower rates of breastfeeding at 6 months; Early depressive symptoms are either a cause or consequence of breastfeeding cessation	Level 4	Limited sample characteristics; difficult to determine whether postpartum depression is a cause or consequence of breastfeeding cessation	Yes, this study defines a relationship between breastfeeding and postpartum depression
Wouk, K., Stuebe, A., & Meltzer-Brody, S. (2017). Postpartum mental health	To evaluate the association between	Data from the 2010-2011 Pregnancy Risk	Descriptive design	Women with postpartum depressive	Level 6	The results must be	Yes, this study defines a relationship

Article	Study Purpose	Sample Characteristics	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
and breastfeeding practices: An analysis using the 2010-2011 pregnancy risk assessment monitoring system. <i>Maternal & Child Health Journal</i> , 21(3), 636–647. https://doi.org/10.1007/s10995-016-2150-6	postpartum depressive symptoms and breastfeeding	Assessment Monitoring System were analyzed		symptoms are at risk for early cessation of breastfeeding, while early cessation of breastfeeding may lead to postpartum depression		interpreted within the context of the study design (cross-sectional); Potential reporting bias	between breastfeeding and postpartum depression, which helps in answering the posed question

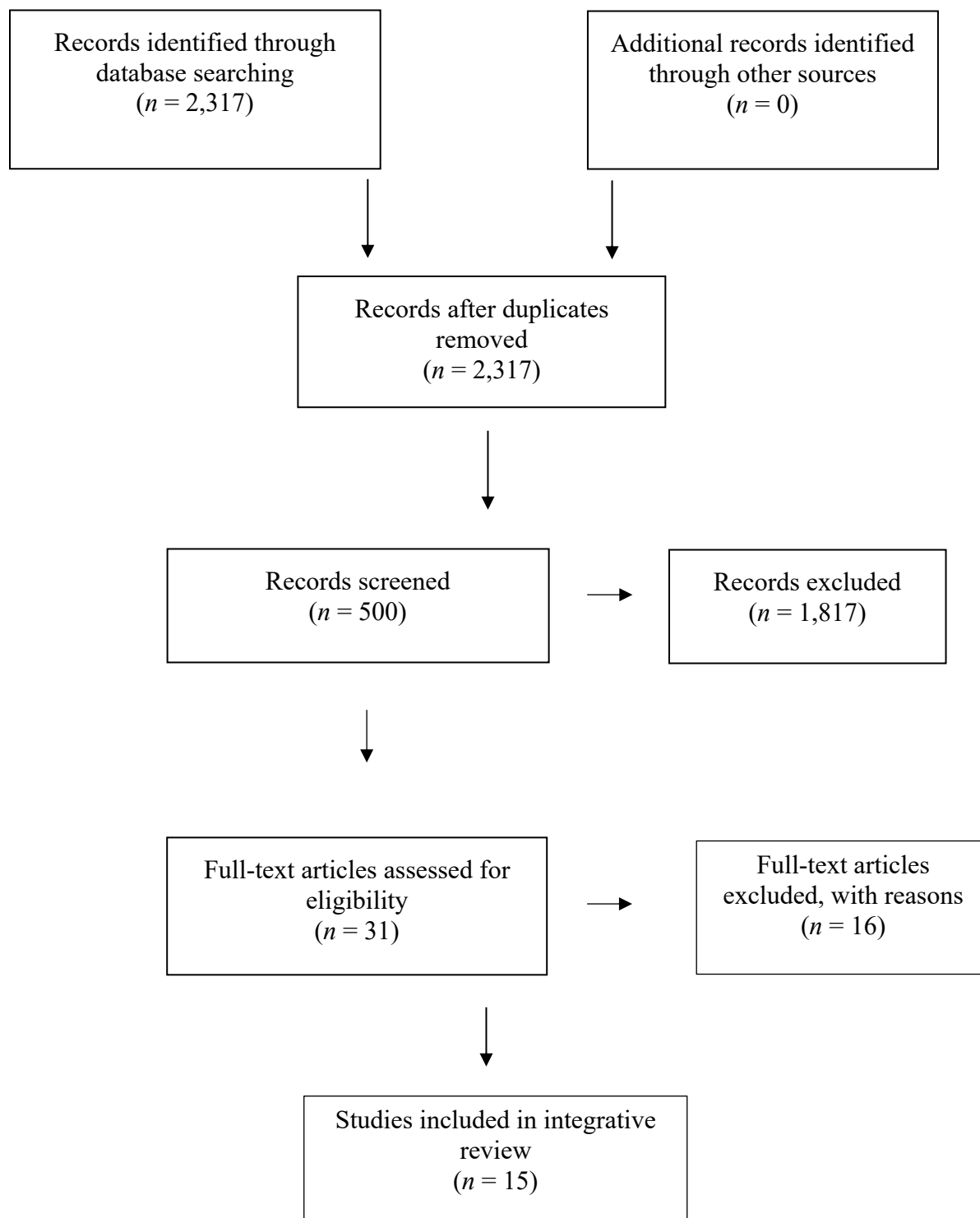
Appendix B

Citi Training Completion Certificate

		Completion Date 12-Jul-2020 Expiration Date 12-Jul-2023 Record ID 37367240
This is to certify that:		
Sarah Johnson		
Has completed the following CITI Program course:		
<div>Biomedical Research - Basic/Refresher (Curriculum Group) Biomedical & Health Science Researchers (Course Learner Group) 1 - Basic Course (Stage)</div>		
<div>Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).</div>		
Under requirements set by:		
Liberty University		
 Collaborative Institutional Training Initiative		
Verify at www.citiprogram.org/verify/?wd5c22b7d-ff3e-4edf-9f5f-e6795c67d52d-37367240		

Appendix C

PRISMA Flow Diagram



Appendix D

Liberty University Institutional Review Board Approval



March 24, 2021

Sarah Johnson
Vickie Moore

Re: IRB Application - IRB-FY20-21-738 Analyzing the Relationship Between Breastfeeding and Postpartum Depression: An Integrative Review

Dear Sarah Johnson and Vickie Moore,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason: It will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office